



FCC RADIO TEST REPORT FCC ID: RBP-RD52

Product : Boha Handheld Scanner
Trade Mark : BOHA!™
Model Name : RD52
Family Model : BOHA!™ Handheld 2
Report No. : S19111503202006

Prepared for

TransAct Technologies Incorporated 2319 Whitney Avenue, Suite 3B Hamden, Connecticut 06518-3509, United States.

Prepared by

Shenzhen NTEK Testing Technology Co., Ltd. 1/F, Building E, Fenda Science Park Sanwei, Xixiang, Bao'an District Shenzhen, Guangdong, China Tel.: +86-755-6115 9388 Fax.: +86-755-6115 6599 Website:http://www.ntek.org.cn





TEST RESULT CERTIFICATION

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Applicant's name TransAct Technologies Incorporated Address 2319 Whitney Avenue, Suite 3B Hamden, Connecticut 06518-3509,
Address
Manufacturer's Name: TransAct Technologies Incorporated
Address
Product description
Product name Boha Handheld Scanner
Model and/or type reference : RD52
Family Model: BOHA!™ Handheld 2
Standards FCC Part15.225
Test procedure ANSI C63.10-2013
This device described above has been tested by NTEK, and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.
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the document.
Date of Test
Date (s) of performance of tests
Date of Issue 23 Dec, 2019
Test Result Pass
Testing Engineer: Jerry Xie
(Jerry Xie)
Technical Manager: Juson chen
(Jason Chen)
Authorized Signatory : Sam. Chain
(Sam Chen)





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1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

FCC Part15, Subpart C (15.225)						
Standard Section	Test Item	Judgment	Remark			
15.207	Conducted Emission	Pass				
15.205(a) 15.209 15.225(abcd)	Radiated Spurious Emission	Pass				
15.225 15.215(c)	20dB Bandwidth	Pass				
15.225(e)	Frequency Tolerance	Pass				
15.203	Antenna Requirement	Pass				

NOTE:

(1) "N/A" denotes test is not applicable in this Test Report.



1.1 TEST FACILITY

All measurement facilities used to collect the measurement data are located at 1/F, Building E, Fenda Science Park, Sanwei Community, Xixiang Street, Bao'an District, Shenzhen 518126 P.R. China.

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The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.10 and CISPR Publication 22.

Site Description

CNAS-Lab. :	The Laboratory has been assessed and proved to be in compliance with CNAS-CL01:2006 (identical to ISO/IEC 17025:2005)
	The Certificate Registration Number is L5516.
IC-Registration	The Certificate Registration Number is 9270A.
	CAB identifier:CN0074
FCC- Accredited	Test Firm Registration Number: 463705.
	Designation Number: CN1184
A2LA-Lab.	The Certificate Registration Number is 4298.01
	This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005 General requirements for the competence of testing and calibration laboratories.
	This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system
	(refer to joint ISO-ILAC-IAF Communiqué dated 8 January 2009).
Name of Firm :	Shenzhen NTEK Testing Technology Co., Ltd.
Site Location :	1/F, Building E, Fenda Science Park, Sanwei Community, Xixiang
	Street, Bao'an District, Shenzhen 518126 P.R. China.

1.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement $\mathbf{y} \pm \mathbf{U}$, where expended uncertainty \mathbf{U} is based on a standard uncertainty multiplied by a coverage factor of **k=2**, providing a level of confidence of approximately 95 % •

No.	Item	Uncertainty
1	Conducted Emission Test	±1.38dB
2	RF power,conducted	±0.16dB
3	Spurious emissions,conducted	±0.21dB
4	All emissions,radiated(<1G)	±4.68dB
5	All emissions,radiated(>1G)	±4.89dB
6	Temperature	±0.5°C
7	Humidity	±2%



2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Equipment	Boha Handheld Scanner			
Trade Mark	BOHA!™			
Model Name	RD52			
Family Model	BOHA!™ Handheld 2			
Model Difference	All models are the same circuit and RF module, except the different models sell to different customers.			
Product Description	The EUT is a Boha Handheld ScannerOperation Frequency:13.56MHzModulation Type:ASKNumber Of Channel1CH.Antenna Designation:Induction coil			
Adapter	Model: AW010WR-0500200UU Input: 100-240V~50/60Hz 0.4A Output: 5V2A			
Rating	DC 3.8V/4000mAh from Battery or DC 5V from USB Port.			
HW Version	N/A			
SW Version	Android 8.1			
Firmware version	20181206.150521	20181206.150521		

Note:

1. For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

2.

Table for Filed Antenna

Ant	Brand	Model Name	Antenna Type	Connector	Gain (dBi)	NOTE
1	N/A	N/A	Induction coil	N/A	N/A	Antenna



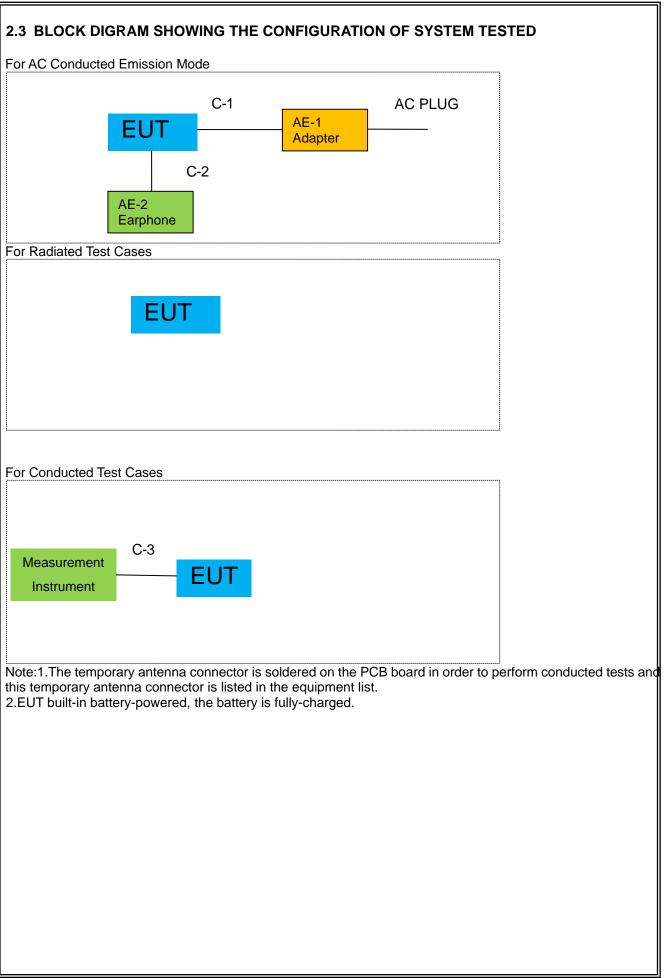
2.2 DESCRIPTION OF TEST MODES

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

Pretest Mode	Description
Mode 1	TX-13.56MHz

For Conducted Emission				
Final Test Mode Description				
Mode 1 TX-13.56MHz				

For Radiated Emission				
Final Test Mode Description				
Mode 1 TX-13.56MHz				





2.4 DESCRIPTION OF SUPPORT UNITS (CONDUCTED MODE)

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The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Brand	Model/Type No.	Series No.	Note
AE-1	Adapter	N/A	N/A	N/A	Peripherals
AE-2	Earphone	N/A	N/A	N/A	Peripherals

Item	Shielded Type	Ferrite Core	Length	Note
C-1	NO	NO	1.2m	
C-2	NO	NO	1.2m	
C-3	YES	NO	0.1m	

Note:

(1) The support equipment was authorized by Declaration of Confirmation.

(2) For detachable type I/O cable should be specified the length in cm in ^[] Length ^[] column.





2.5 EQUIPMENTS LIST FOR ALL TEST ITEMS

Чă	adiatio	n& Conducted	lest equipment					
	ltem	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibrati on period
	1	Spectrum Analyzer	Aglient	E4407B	MY45108040	2019.05.13	2020.05.12	1 year
	2	Spectrum Analyzer	Agilent	N9020A	MY49100060	2019.08.28	2020.08.27	1 year
	3	Spectrum Analyzer	R&S	FSV40	101417	2019.08.28	2020.08.27	1 year
	4	Test Receiver	R&S	ESPI7	101318	2019.05.13	2020.05.12	1 year
	5	Bilog Antenna	TESEQ	CBL6111D	31216	2019.04.15	2020.04.14	1 year
	6	50Ω Coaxial Switch	Anritsu	MP59B	6200983705	2018.05.19	2020.05.18	3 year
	7	Horn Antenna	EM	EM-AH-1018 0	2011071402	2019.04.15	2020.04.14	1 year
	8	Active Loop Antenna	SCHWARZBE CK	FMZB 1519 B	055	2019.12.10	2020.12.09	1 year
	9	LF Cable	N/A	R-03	N/A	2018.06.05	2021.06.05	3 year
	10	PSG Analog Signal Generator	Agilent	E8257D	MY51110112	2019.08.06	2020.08.05	1 year
	11	Test Cable (9KHz-30MHz)	N/A	R-01	N/A	2017.04.21	2020.04.20	3 year
	12	Test Cable (30MHz-1GHz)	N/A	R-02	N/A	2017.04.21	2020.04.20	3 year

AC Conduction Test equipment

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	Test Receiver	R&S	ESCI	101160	2019.05.13	2020.05.12	1 year
2	LISN	R&S	ENV216	101313	2019.04.15	2020.04.14	1 year
3	LISN	SCHWARZBE CK	NNLK 8129	8129245	2019.05.13	2020.05.12	1 year
4	50Ω Coaxial Switch	ANRITSU CORP	MP59B	6200983704	2018.05.19	2020.05.18	2 year
5	Test Cable (9KHz-30MH z)	N/A	C01	N/A	2017.04.21	2020.04.20	3 year
6	Test Cable (9KHz-30MH z)	N/A	C02	N/A	2017.04.21	2020.04.20	3 year
7	Test Cable (9KHz-30MH z)	N/A	C03	N/A	2017.04.21	2020.04.20	3 year

Note:

1.We will use the temporary antenna connector (soldered on the PCB board) When conducted test And this temporary antenna connector is listed within the instrument list

2. Each piece of equipment is scheduled for calibration once a year except the Test Cable& Aux Equipment which is scheduled for calibration every 3 years.



3. ANTENNA REQUIREMENT

3.1 STANDARD REQUIREMENT

15.203 requirement: For intentional device, according to 15.203: an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

3.2 EUT ANTENNA

The EUT antenna is permanent attached antenna. It comply with the standard requirement.



4. EMC EMISSION TEST

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4.1 CONDUCTED EMISSION MEASUREMENT

4.1.1 POWER LINE CONDUCTED EMISSION Limits (Frequency Range 150KHz-30MHz)

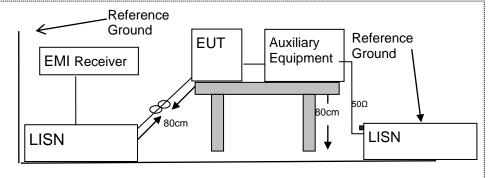
	Conducted	Emission Limit
Frequency(MHz)	Quasi-peak	Average
0.15-0.5	66-56*	56-46*
0.5-5.0	56	46
5.0-30.0	60	50

Note: 1. *Decreases with the logarithm of the frequency

2. The lower limit shall apply at the transition frequencies

3. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

4.1.2 TEST CONFIGURATION



4.1.3 TEST PROCEDURE

According to the requirements in Section 13.1.4.1 of ANSI C63.10-2013 Conducted emissions the EUT measured in the frequency range between 0.15 MHz and 30 MHz using CISPR Quasi-Peak and average detector mode.

- 1. The EUT was placed 0.4 meter from the conducting wall of the shielding room.
- 2. The EUT was placed on a table which is 0.8m above ground plane.
- Connect EUT to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
- 4. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40cm long.
- I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
- 6. LISN at least 80 cm from nearest part of EUT chassis.
- 7. The frequency range from 150KHz to 30MHz was searched.
- 8. Set the test-receiver system to Peak Detect Function and specified bandwidth(IF bandwidth=9KHz) with Maximum Hold Mode
- 9. For the actual test configuration, please refer to the related Item -EUT Test Photos.



4.1.4 TEST RESULT

EUT :	Boha Handheld Scanner	Model Name :	RD52
Temperature :		Relative Humidity:	54%
Pressure :	1010hPa	Phase :	L
Test Voltage :	DC 5V from Adapter AC 120V/60Hz	Test Mode :	Mode 1

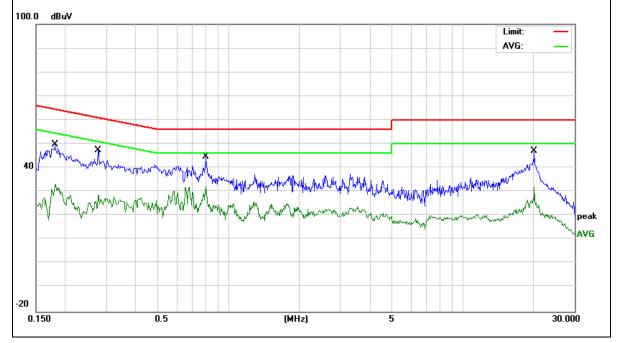
ACCREDITED Certificate #4298.01

Frequency	Reading Level	Correct Factor	Measure-ment	Limits	Margin	Remark
(MHz)	(dBµV)	(dB)	(dBµV)	(dBµV)	(dB)	Remark
0.1804	40.00	9.76	49.76	64.46	-14.70	QP
0.1804	23.39	9.76	33.15	54.46	-21.31	AVG
0.2757	37.67	9.75	47.42	60.94	-13.52	QP
0.2757	18.95	9.75	28.70	50.94	-22.24	AVG
0.7980	34.92	9.74	44.66	56.00	-11.34	QP
0.7980	22.71	9.74	32.45	46.00	-13.55	AVG
20.1737	36.78	10.24	47.02	60.00	-12.98	QP
20.1737	21.76	10.24	32.00	50.00	-18.00	AVG

Remark:

1. All readings are Quasi-Peak and Average values.

2. Factor = Insertion Loss + Cable Loss.





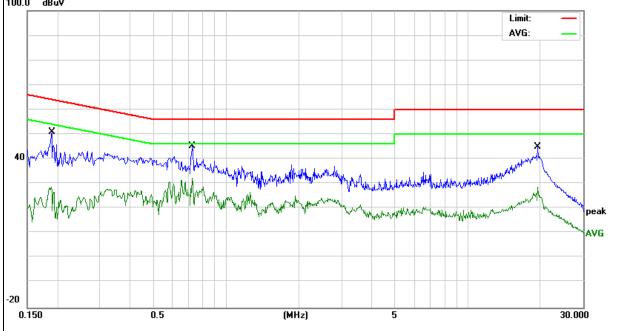
EUT :	Boha Handheld Scanner	Model Name :	RD52
Temperature :	26 ℃	Relative Humidity :	54%
Pressure :	1010hPa	Phase :	N
Test Voltage :	DC 5V from Adapter AC 120V/60Hz	Test Mode :	Mode 1

Frequency	Reading Level	Correct Factor	Measure-ment	Limits	Margin	Domork
(MHz)	(dBµV)	(dB)	(dBµV)	(dBµV)	(dB)	Remark
0.1900	41.09	9.73	50.82	64.03	-13.21	QP
0.1900	19.09	9.73	28.82	54.03	-25.21	AVG
0.7217	35.44	9.75	45.19	56.00	-10.81	QP
0.7217	22.57	9.75	32.32	46.00	-13.68	AVG
19.4339	34.63	10.20	44.83	60.00	-15.17	QP
19.4339	18.59	10.20	28.79	50.00	-21.21	AVG

Remark:

All readings are Quasi-Peak and Average values.
 Factor = Insertion Loss + Cable Loss.

100.0 dBuV





4.2 RADIATED EMISSION MEASUREMENT

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4.2.1 Radiated Emission	Limits (FCC 15.209)	
Frequencies (MHz)	Field Strength (micorvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

Note:

(1) The tighter limit applies at the band edges.

(2) Emission level (dBuV/m)=20log Emission level (uV/m).

According to FCC Part 15.247(d): radiated emissions which fall in the restricted bands, as defined in §15.205(a) must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)). According to FCC Part15.205, Restricted bands

MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
10.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	(2)
13.36-13.41			

LIMITS OF RADIATED EMISSION MEASUREMENT (FCC 15.225)

(a)The field strength of any emissions within the band 13.553-13.567 MHz shall not exceed 15,848 microvolts/meter at 30 meters, equal to 124dBuV/m at 3 meters.

(b) Within the bands 13.410-13.553 MHz and 13.567-13.710 MHz, the field strength of any emissions shall not exceed 334 microvolts/meter at 30 meters, equal to 94.5dBuV/m at 3 meters.
(c) Within the bands 13.110-13.410 MHz and 13.710-14.010 MHz the field strength of any emissions shall not exceed 106 microvolts/meter at 30 meters, equal to 80.5dBuV/m at 3 meters..
(d) The field strength of any emissions appearing outside of the 13.110-14.010 MHz band shall not exceed the general radiated emission limits in § 15.209.



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Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RB / VB (emission in restricted band)	1MHz / 1MHz for Peak

Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP

4.2.2 TEST PROCEDURE

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- a. The measuring distance of at 3 m shall be used for measurements at frequency up to 1GHz And above 1GHz,
- b. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3m meter. The table was rotated 360 degrees to determine the position of the highest radiation.
- c. The height of the equipment or of the substitution antenna shall be 0.8 m; the height of the test antenna shall vary between 1 m to 4 m.
- d. The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
- e. If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.
- f. For the actual test configuration, please refer to the related Item –EUT Test Photos. Note:

Both horizontal and vertical antenna polarities were tested

and performed pretest to three orthogonal axis. The worst case emissions were reported

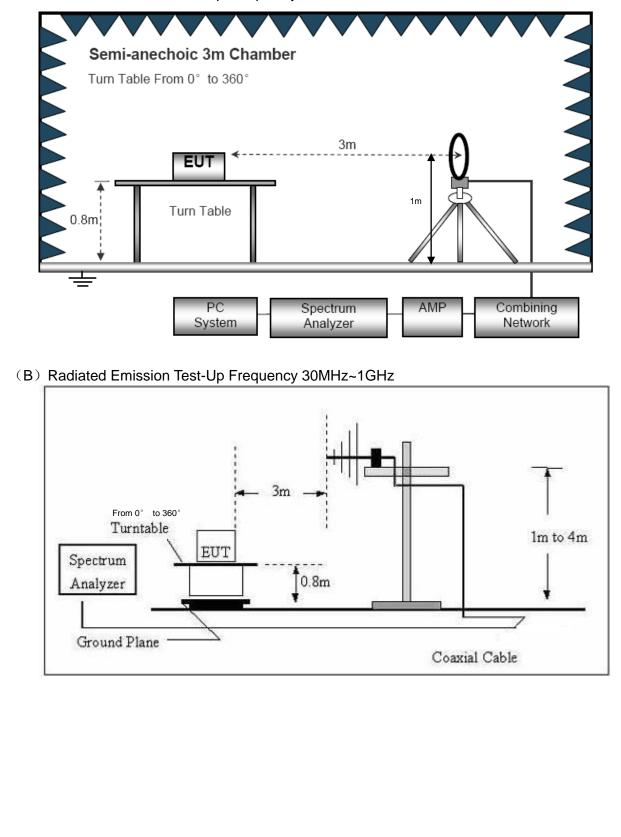
4.2.3 DEVIATION FROM TEST STANDARD

No deviation



4.2.4 TEST SETUP

(A) Radiated Emission Test-Up Frequency Below 30MHz



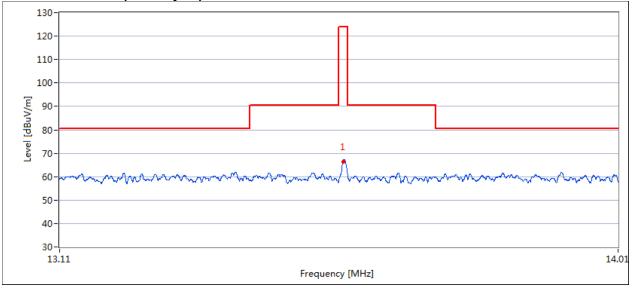
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4.2.5 TEST RESULTS (BELOW 30MHz)

EUT :	Boha Handheld Sca			RD52
Temperature :	20 °C		ative midtity:	54%
Pressure :	1010 hPa	Tes	t Voltage :	DC 3.8V
Test Mode :	TX-13.56MHz			
easurement Ple	ot (Polarity: X):			
130-				
120-		——————————————————————————————————————		
110-				
100-				
E 90-	r			
90- 90- 80- 90- 70-				
		1		
		Δ		
60-h-m-m	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	mon how how	w. C. Marchard and the	wwwwwwwww
50-				
40-				
30-				
13.11		Frequency [MHz]		1
		1 2		
easurement Re				
Frequency	Pre-scan Level MaxPeak	Final Test Level	Limit	Margin
	WAAF Eak	MaxPeak	MaxPeak	
MHz	dBuV/m	dBuV/m	dBuV/m 124	dB
			dBuV/m	
MHz 13.561	dBuV/m	dBuV/m	dBuV/m	dB
MHz 13.561	dBuV/m 68.9	dBuV/m	dBuV/m	dB
MHz 13.561 easurement Ple	dBuV/m 68.9	dBuV/m	dBuV/m	dB
MHz 13.561 easurement Plo	dBuV/m 68.9	dBuV/m	dBuV/m	dB
MHz 13.561 easurement Plo 130- 120- 110-	dBuV/m 68.9	dBuV/m	dBuV/m	dB
MHz 13.561 easurement Ple	dBuV/m 68.9	dBuV/m	dBuV/m	dB
MHz 13.561 easurement Ple	dBuV/m 68.9	dBuV/m	dBuV/m	dB
MHz 13.561 easurement Ple	dBuV/m 68.9	dBuV/m	dBuV/m	dB
MHz 13.561 easurement Plo 130- 120- 110- 100- E 90- 90-	dBuV/m 68.9	dBuV/m	dBuV/m	dB
MHz 13.561 easurement Ple	dBuV/m 68.9	dBuV/m	dBuV/m	dB
MHz 13.561 easurement Ple 130- 120- 110- 100- 1	dBuV/m 68.9	dBuV/m	dBuV/m	dB
MHz 13.561 easurement Plo 130- 120- 110- 100- 1	dBuV/m 68.9	dBuV/m	dBuV/m	dB
MHz 13.561 easurement Ple 130- 120- 110- 100- 100- 100- 100- 50- 40-	dBuV/m 68.9	dBuV/m	dBuV/m	dB
MHz 13.561 easurement Plo 130- 120- 110- 100- 1	dBuV/m 68.9	dBuV/m	dBuV/m	dB 64.2
MHz 13.561 easurement Plo 130- 120- 110- 100- 100- 100- 100- 50- 40- 30- 100-	dBuV/m 68.9	dBuV/m	dBuV/m	dB
MHz 13.561 easurement Ple 130- 120- 110- 100- 100- 100- 100- 100- 50- 40- 30- 13.11	dBuV/m 68.9 ot (Polarity: Y):	<u>dBuV/m</u> 59.8	dBuV/m	dB 64.2
MHz 13.561 easurement Pla 130 120 110 100 90 90 90 90 90 90 90 90 100 10	dBuV/m 68.9 ot (Polarity: Y):	dBuV/m 59.8	dBuV/m 124	dB 64.2
MHz 13.561 easurement Pla 130 120 110 100 90 90 80 70 60 50 40 30 13.11 easurement Re Frequency	dBuV/m 68.9 ot (Polarity: Y):	dBuV/m 59.8	Limit MaxPeak	dB 64.2
MHz 13.561 easurement Pla 130 120 110 100 90 90 90 90 90 90 90 90 100 10	dBuV/m 68.9 ot (Polarity: Y):	dBuV/m 59.8	dBuV/m 124	dB 64.2

Measurement Plot (Polarity: Z):



Measurement Result:

Frequency MHz	Pre-scan Level MaxPeak dBuV/m	Final Test Level MaxPeak dBuV/m	Limit MaxPeak dBuV/m	Margin dB
13.558	68.5	57.9	124	66.1

Spurious emissions at 9KHz~13.110MHz & 14.010MHz~30MHz

	Ant.Pol.	Emission			
Frequency	7411.1 01.	Level	Limits	Margin	Detector
		(dBuV/m)			
(\/凵→)	dBµV	@?m	dBµV/m		
(MHz)	@3m	@3m	@3m	(dB)	
0.287	Х	64.761	98.446	-33.671	AVG
1.512	Х	28.506	64.013	-35.507	QP
6.696	Х	42.229	69.542	-27.314	QP
14.553	Х	47.227	69.542	-22.315	QP
26.353	Х	37.550	69.542	-31.992	QP

Note:

Below 30MHz, Pre-test the X, Y, Z axis to find X axis is worst case, so only record X axis test data. X: Field strength which this device generates since the position of the charging coil and loop antenna differ by 0 degrees.

Y: Field strength which this device generates since the position of the charging coil and loop antenna differ by 90 degrees.

Z: Field strength which this device generates since the position of the charging coil and loop antenna differ by 180 degrees





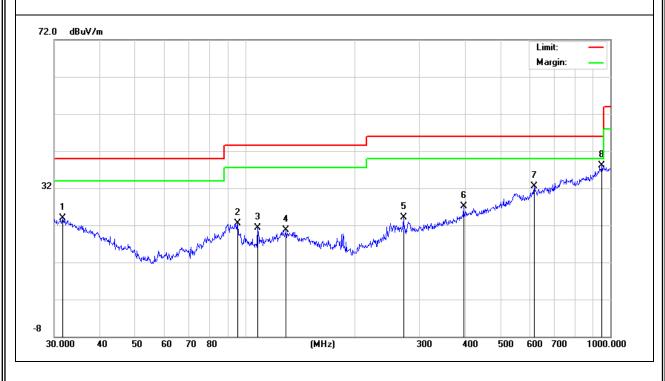
4.2.6 TEST RESULTS (BETWEEN 30 - 1000 MHZ)

EUT :	Boha Handheld Scanner	Model Name :	RD52
Temperature :	20 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Voltage :	DC 3.8V
Test Mode :	тх	Polarization :	Horizontal

_		-				
Freq.	Reading	Factor	Measurement	Limit	Over	Detector
(MHz)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Delector
31.6202	5.63	18.32	23.95	40	-16.05	QP
95.427	11.34	11.1	22.44	43.5	-21.06	QP
108.2667	9.08	12.24	21.32	43.5	-22.18	QP
129.4678	7.26	13.45	20.71	43.5	-22.79	QP
271.3246	8.82	15.37	24.19	46	-21.81	QP
396.2414	7.71	19.38	27.09	46	-18.91	QP
618.5369	7.73	24.8	32.53	46	-13.47	QP
948.7609	7.03	31.09	38.12	46	-7.88	QP

Remark:

Factor = Antenna Factor + Cable Loss.





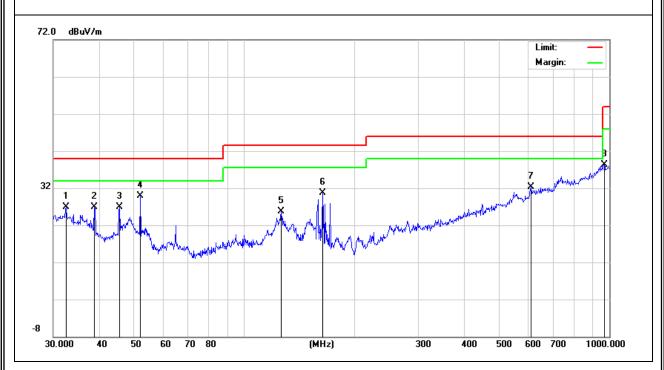
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EUT :	Boha Handheld Scanner	Model Name :	RD52
Temperature :	20 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Voltage :	DC 3.8V
Test Mode :	ТХ	Polarization :	Vertical

 Freq.	Reading	Factor	Measurement	Limit	Over	Detector
(MHz)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Delector
32.5197	8.91	17.91	26.82	40	-13.18	QP
38.8879	12.03	14.88	26.91	40	-13.09	QP
45.5347	15.4	11.43	26.83	40	-13.17	QP
52.0251	21.91	7.94	29.85	40	-10.15	QP
126.3286	12.27	13.36	25.63	43.5	-17.87	QP
163.755	19.22	11.45	30.67	43.5	-12.83	QP
609.9217	7.82	24.5	32.32	46	-13.68	QP
968.9338	7.09	31.26	38.35	54	-15.65	QP

Remark:

Factor = Antenna Factor + Cable Loss.





5. BANDWIDTH TEST

5.1 TEST PROCEDURE

1. The transmitter output (antenna port) was connected to the spectrum analyzer in peak mode.

2. 20dB Bandwidth the resolution bandwidth of 1 kHz and the video bandwidth of 1 kHz were used.

3. Measured the spectrum width with power higher than 20dB below carrier.

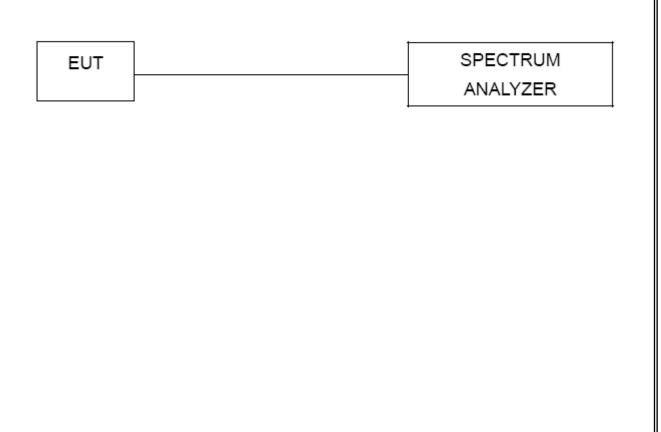
5.2 DEVIATION FROM STANDARD

15.215

(c) Intentional radiators operating under the alternative provisions to the general emission limits, as contained in §§15.217 through 15.257 and in subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated

FCC Part15.225 Operation within the band 13.110 - 14.010MHz

5.3 TEST SETUP







5.4 TEST RESULTS

EUT :	Boha Handheld Scanner	Model Name :	RD52
Temperature :	26 ℃	Relative Humidity :	54%
Pressure :	1020 hPa	Test Power :	DC 3.8V
Test Mode :	ТХ		

Test Channel	Frequency (MHz)	20 dBc Bandwidth (kHz)
CH01	13.56	0.955

Ref Level	10.00 dBr	n 😑 RI	BW 300 Hz			
Att	30 di	B SWT 6.3 ms 👄 VI	BW 1 kHz Mo	le Auto FFT		
)1Pk Max						
				M1[1]		-2.80 dB
) dBm				M1		13.5619680 MI
o abin				n j iB		20.00
10 dBm				<u> </u>		955.000000000
10 00.00				Q factor	1	14199
20 dBm		_		<u>τ1</u> <u>†</u> 2		
				y I X		
30 dBm						
40 dBm						
	_	m				
50 dBm						
60 dBm						
70 dBm						
80 dBm—						
CF 13.56 M	1Hz		691 pt:	5		Span 20.0 kH
larker						-
Type Re	f Trc	X-value	Y-value	Function	Fun	ction Result
M1	1	13.561968 MHz	-2.80 dBm	ndB down		955.0 H
T1	1	13.561476 MHz	-22.57 dBm	ndB		20.00 d
T2	1	13.562431 MHz	-22.40 dBm	Q factor		14199





6. FREQUENCY TOLERANCE

6.1 Requirement: Test Requirement:	FCC Part15.225
Test Method:	ANSI C63.4:2014
Requirement:	The frequency tolerance of the carrier signal shall be maintained
	within +/- 0.01% of the operating frequency over a temperature
	variation of –20 degrees to +50 degrees C at normal supply
	voltage, and for a variation in the primary supply voltage from
	85% to 115% of the rated supply voltage at a temperature of 20
	degrees C. For battery operated equipment, the equipment tests
	shall be performed using a new battery.
6.2 Test Procedure	e

1. The EUT was placed on a turn table which is 0.8m above ground plane.

2.Set EUT as normal operation

3.Set SPA Center Frequency = fundamental frequency, RBW, VBW= 10kHz, Span =100kHz.

4.Set SPA Max hold. Mark peak.



Test Result

Power Supply	Temperature (℃)	Measured Frequency (MHz)	Frequency Error (MHz)	Result (ppm)	Part 15.225 Limit
	-20	13.560570	0.000570	42.001576	+/- 0.01%(100ppm)
DC 3.3V	20	13.560907	0.000907	66.880981	+/- 0.01%(100ppm)
	50	13.560854	0.000854	62.984705	+/- 0.01%(100ppm)
	-20	13.560071	0.000071	5.219620	+/- 0.01%(100ppm)
DC 3.8V	20	13.560887	0.000887	65.420534	+/- 0.01%(100ppm)
	50	13.560392	0.000392	28.918465	+/- 0.01%(100ppm)
	-20	13.560508	0.000508	37.473399	+/- 0.01%(100ppm)
DC 4.4V	20	13.560317	0.000317	23.343221	+/- 0.01%(100ppm)
	50	13.560353	0.000353	25.996225	+/- 0.01%(100ppm)

END REPORT